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ABSTRACT

Student attrition was studied in relation to the quality of the interaction between the student and the college environment, using a modified version of the Total Adjustment Scale, a self-report rating scale. Academic functioning, social functioning, and bonding to the college setting were assessed for 459 college freshmen at the University of Iowa during the eleventh week of the second academic semester. Statistical analysis of the 40-item adjustment instrument indicates a high degree of reliability for the scale, and these findings closely approximate those obtained during the earlier development of the instrument at Clark University. Those students expressing substantial expectations of not continuing at the University of Iowa through graduation were characterized as being less socially and/or academically adjusted than students indicating expectations of persistence through graduation. These results parallel those at Clark University. Factor analysis of the instrument yielded further confirmatory evidence for the presence of three factors: social integration, academic adjustment, and plans to persist at the university. It appears that the third factor corresponding to the previously labelled general bonding subscale is primarily concerned with a student's ability or inability to form a strong bond to the college or university. Additional analysis suggests that one's ability to effectively form social ties in a college environment may, generally speaking, be more crucial in relation to attrition than academic adjustment. However, this relationship may be reversed for individuals who do not need an extensive social life. A bibliography is appended. (SW)

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Identification of High-Risk College Students

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Abstract

The present study was concerned with the identification of students at risk of leaving college once they have matriculated. Traditional approaches of predicting student persistence have focused largely upon various personality and demographic characteristics or college environments and their properties. It was hypothesized in the present study that a more fruitful approach may be to examine the quality of the student X environment interaction. A self-report rating scale, tapping various aspects of the adjustment process, was completed and returned by 459 students during the 11th week of the second academic semester. Preliminary analyses indicate the usefulness of this instrument in identifying students who may be at risk of leaving. Reliability and validity information for this instrument is also presented.

Retention of students has been a concern for academic administrators and planners alike for many years. Failure to adequately fit into a college environment and persist through graduation has a considerable cost for the student as well. Research conducted at the University of Iowa as well as many other universities across the United States has indicated that the freshmen year is particularly crucial in the sense that it is during this period that the highest attrition rates are reported (Pantages and Creedon, 1978).

Researchers have attempted to understand the attrition process via various approaches. One major approach has been the measurement of various personal characteristics and their relationship to the process of attrition. These personal characteristics have included measures of academic motivation, (Baumgart & Johnstone, 1977; Trent & Medsker, 1968) social propensity, (Astin, 1975; Pean, 1980; Bean & Creswell, 1980; Trent & Medsker, 1968; Gekoski & Schwartz, 1961; Pascarella & Terenzini) and academic aptitude (Summerskill, 1962; Slocum, 1956; Astin, 1973; Iffert, 1957).

A second major approach has been the examination and measurement of various components of the college environment itself. Extensive scales, based on large samples of colleges and students have been devised in this effort. CUES (College and University Environmental Scales, Pace & Stern, 1958), CCI (College Characteristics Index, Pace, 1962; Stern, 1963), and the EAT (Environmental Assessment Techni-

que, Astin & Holland, 1961) represent the more familiar and noteworthy scales associated with this technique. Unfortunately, neither of these approaches has significantly increased our understanding of the attrition process beyond the widespread conclusion that this process is in fact very complex.

In addition to those approaches discussed above, several well-intentioned intervention programs, aimed at reducing attrition, have also resulted in mixed findings. One major problem associated with these interventions is that many or even most students who experience difficulty in adjusting to college do not take advantage of programs offered for the purpose of facilitating that adjustment (Baker & Nisenbaum, 1979; Lindquist & Love, 1978).

This paper presents a deviation from these more typical approaches in that the interaction between the matriculated student and his/her college environment is believed to be a more fruitful approach to the understanding of the attrition problem. Several of the more significant points supporting this rationale follow.

First, many personality characteristics, academic motivation, social propensity, etc. are known to fluctuate in their absolute magnitude over time. Therefore, obtaining a single score on such characteristics, at one point in time, (as is traditionally done in most studies concerned with pre-enrollment variables) yields little in the way of accurate predictive power (Pantages & Creedon, 1978).

Secondly, environmental factors hypothesized as being related to attrition are difficult to identify because of their complexity and instability as well. Astin and Holland (1961) state that the college environment is difficult to describe because it is dependent upon the nature of its members. Wide variation in the values, goals, and attitudes among college students on the same campus makes description of such environments difficult.

Finally, examining the quality of the student X environment interaction enables the investigator to (1) ascertain the student's actual level of adjustment to the environment at any particular point in time and (2) ascertain which particular aspects of the adjustment process are responsible for the apparent lack of fit between the student and his/her environment. Moreover, this information enables educators to intervene in the adjustment process when such interventions may be most fruitful.

Examining the transitional process into college more closely, one may identify several rather broad areas of adjustment the incoming student is faced with. To the extent that a central feature of a college environment is the requirement of protracted and frequently intense involvement with academic work, an individual's ability to adjust to such requirements should be one determinant of his or her adaptation to the academic setting and should be closely related to his/her persistence in that environment. It is hy-

pothesized, therefore, that individuals experiencing difficulty in adjusting and coping with academic pressures will be more likely to withdraw from that setting than individuals for whom the academic adjustment is less difficult.

Furthermore, because a college -- particularly a residential college -- is inescapably a social as well as academic community, with large numbers of similar-aged persons living in close proximity over a prolonged period of time, how well the individual is able to adjust to such an environment should also be associated with his/her persistence in that environment. Based on this conception of the university community, it was further hypothesized that individuals unable to make a satisfactory social adjustment to the university setting will be more likely to withdraw from that setting than those individuals who are able to make an adequate social adjustment.

Finally, it was hypothesized that individuals feeling satisfied regarding their choice to attend college and having established a "bond" with the college will be most likely to persist at that college or university through graduation. On the other hand, individuals indicating an inability to establish such a bond with the college environment are hypothesized to be less likely to persist at that institution and more likely to withdraw altogether.

These and other hypotheses have been examined in an ongoing, longitudinal project at Clark University. In order

to measure those aspects of the transition process discussed above, a self-rating scale was devised that originally consisted of 52 statements related to four aspects of a student's adjustment to the college situation. In addition to the academic, social, and general bonding aspects of this instrument, the original version included an additional component, labelled as intra-personal adjustment. Items comprising this component were aimed at assessing personal psychological status (e.g., I feel blue and moody a lot). This component served as an index of the degree to which an individual's personal functioning was being affected by his/her ability to adjust satisfactorily to the other aspects of the transition process. It was predicted that individuals having a considerable amount of difficulty in one or more of the other areas of adjustment (e.g., social, academic) would also manifest a considerable amount of psychological distress.

For the data collected at Clark University, Cronbach's alpha (1951), a measure of internal consistency and reliability, was .94 for three administrations of the TAS (Total Adjustment Scale), .93 for two, and .92 for the sixth. For the academic adjustment subscale alpha ranged between .82 and .87; for the social adjustment subscale .83 and .89; and for the general bonding subscale, .84 and .88.

One dependent variable of interest in this particular study was enrollment status at the end of one and two years

of college. This variable was measured dichotomously, with a student classified either as a persister or as a withdrawer at particular points of time.

Point biserial correlations between the overall TAS score and enrollment status ranged from $-.18$ to $-.34$ for the six administrations at Clark University. Moreover, approximately 10% of the variance in the dependent variable (enrollment status) may be accounted for by this instrument as a whole.

It should be noted, however, that individual subscales regressed upon the dependent variable (enrollment status), have yielded multiple R 's as high as $.58$ (accounting for nearly 36% of the variance in the dependent variable). These latter findings suggest that various portions of the total instrument may be differentially related to various aspects of the transition process, one of which is attrition.

The main purpose of the present study is multi-fold. First, it serves as a replication and extension of an ongoing longitudinal study which relies heavily upon the adjustment instrument. Second, administering the adjustment instrument to a different type of college population (a large Midwestern university as opposed to a small northeastern university), will yield data concerning the generalizability of the instrument. Finally, further investigation into the reliability and validity aspects of the instrument

should result in a better understanding of these scale characteristics and properties.

Method

In an effort to shorten the overall length of the TAS for the present study, the intrapersonal component was eliminated. The resulting 40 item scale consisted of three subcomponents: academic, social, and bonding. Nineteen of these items concerned social functioning (e.g., I have established several close ties at the U of I). Eighteen of these items were concerned with academic functioning (e.g., I am satisfied with my academic performance in college). Fourteen of these items concerned bonding to the college setting in a more general fashion (e.g., My transition into college has been easy). Some overlap between these components (particularly the social and bonding components) accounts for the apparent difference in number of items in the full scale as compared to the sum of each individual component.

A Likert scale consisting of a continuum of 19 asterisks served as the original rating scale. One end of the continuum was labelled "Strongly Agree" while the other end was labelled "Strongly Disagree". Subjects were asked to encircle an asterisk at the point in the continuum which best represented the degree to which the statement was true for them. The more recent version of this instrument consists of a ten-point continuum with anchor-points labelled

in a similar fashion as mentioned above. Sixteen of the 40 items were worded in the reverse direction in order to control agreement response set. For scoring purposes, values from 0 to 9 were assigned to successive points from the positive to the negative end within each continuum. The resulting range for the total scale, for the 40 item version, was from 0 to 360; with greater scores indicating a greater amount of difficulty in adjustment.

The revised TAS was mailed to a randomly selected group of 1500 University of Iowa freshmen (approximately 50% of the freshmen class) during the 11th week of the second semester (80-81). Completed forms were returned from 459 (or 30%) of this particular sample.

Enrollment status information at The University of Iowa was not yet available at the time of this writing, making direct comparisons with the respective Clark University data impossible. Nonetheless, considerably more intricate techniques have been employed in the further examination of this particular instrument based upon data collected at The U of I, including a factor analysis of the entire scale.

Results

Cronbach's alpha for the various components were: .90 for the total scale; .84 for the academic adjustment component; .89 for the social adjustment subcomponent; and .84 for the bonding subcomponent.

Table 1 contains the correlation matrix for the three subcomponents and the total adjustment score. Higher scores on any of these particular scales indicates a higher degree of difficulty regarding that particular aspect of adjustment.

Table 1 here

The high degree of intercorrelation between the social adjustment subcomponent and the general bonding component may be accounted for by two factors. First, both components share several items in common (9). Second, it appears that many or all of the general bonding items may have been interpreted by subjects as referring to social types of adjustment.

As mentioned earlier, enrollment status information was not available at the time that this paper was being written. Therefore, it was not possible to correlate the adjustment instrument with decisions to persist or withdraw from the University. However, this analysis was approximated by using the first item on the instrument ("I expect to stay at the U of I until I graduate") as the dependent variable of interest and regressing the various subcomponents on this variable. The results of this multiple regression analysis appear in Table 2. Once all three subcomponents entered the equation, 64% of the variance in the dependent variable was

accounted for. If one may assume that expectations of withdrawal are correlated with actual attrition, then these results, though tentative, indicate substantial evidence for the adjustment instrument's ability to identify students at risk of leaving. becomes available.

To understand the composition of the adjustment instrument better, a factor analysis of the scale was performed. The initial analysis indicated the presence of 6 factors with significant eigen-values (Table 3). Closer examination of these results led to the identification of 3 factors which appeared to be considerably larger than the remaining 3.

This analysis presents construct validity information for the adjustment instrument. These larger factors clearly represent those three components of the adjustment instrument which were believed to exist at the time of its development.

More specifically, the first factor, referring to social integration, was characterized by items such as "I have been able to meet as many people and make as many friends as I would like" and "I have become very involved with social activities in college". The second factor, academic adjustment, was characterized by items such as "I have trouble concentrating when I try to study" and "I enjoy my school-work". The third and final factor, concerning attitudes toward planning to stay at the university and generally feel-

ing positive about persisting in the same environment, is characterized by items such as "I am pleased now about my decision to attend the U of I in particular" and "I expect to stay at the U of I until I graduate."

In order to determine which of the first two factors (social integration or academic adjustment) were more closely related to the third factor (planning to persist at the University) an oblique rotation was performed using the three factors.

Table 4 here

Examining the results contained in Tables 1 and 4, it appears that social integration is more closely related to plans to persist than academic adjustment. This finding suggests that the social aspect of the adjustment process may be more crucial than the academic component when attrition is concerned. More substantive conclusions will be possible when attrition information becomes available.

Discussion

The results of the analyses reported herein present a considerably more fruitful approach to the understanding of the attrition problem in colleges and universities than other, more traditional, approaches. Rather than focusing exclusively on either pre-enrollment variables and/or environmental characteristics, the present approach is concerned

with the student X college environment interaction and the quality of that interaction.

The statistical tests performed on the 40-item adjustment instrument indicate a high degree of reliability for the scale, both as a whole and for its separate subcomponents. Moreover, these reliability estimates closely approximate those obtained during the earlier development of this instrument at Clark University (described earlier).

The regression analysis investigating the relationship between the adjustment instrument and student persistence, though tentative at this point, provides a considerable amount of hope in the instrument's ability to identify those individuals at risk of leaving. Those students expressing substantial expectations of not continuing at the U of I through graduation were characterized as being less socially and/or academically adjusted than students indicating expectations of persistence through graduation. Again, these results parallel those at Clark University where more extensive work with this scale has been performed.

Factor analysis of this instrument yielded further confirmatory evidence for the presence of three factors: social integration, academic adjustment, and plans to persist at the University. It appears that the third factor, corresponding to the previously labelled "general bonding" subscale, is primarily concerned with a student's ability or inability to form a strong bond to the college or university.

Feeling pleased with one's decision to attend a particular institution is one example of the presence of such a bond.

Clearly, being able to form such a bond or relationship with one's environment may be dependent upon various factors. In order to determine which of the two other factors (academic adjustment or social integration) were more closely associated with the third factor, an additional analysis was performed (oblique rotation of the three factors). As described earlier, the social integration component was found to be more closely related to one's decision to persist than the academic adjustment component. This finding seems to suggest that one's ability to effectively form social ties in a college environment may, generally speaking, be more crucial in relation to attrition than academic adjustment. It should be noted, however, that this relationship may be reversed for some individuals. For those individuals for whom an extensive social life is not a necessity, making a suitable academic adjustment may be a more important factor in their decisions to persist at a particular institution.

The next step in this research at the U of I will be to gather enrollment status information in order to determine more precisely the ability of this instrument to identify students at risk of leaving the college. Once this information is gathered it may be possible to develop some sort of intervention program aimed at reducing and/or eliminating

some of the problems students identified as being at risk may be experiencing. An equally important advantage of this instrument is that it indicates areas of difficulty (e.g., academic, social, and more particular aspects of each), thus carrying implications for the kinds of intervention that would be most appropriate for particular individuals. This latter feature is considered quite desirable in that it enables the interested educator to determine early on just what type of intervention is most suitable, and for whom. The problem then becomes one of developing an adequate intervention procedure which gets help to students identified as having difficulties without violating their personal rights to privacy and to be left alone.

Table 1
Correlation Matrix of Three Subcomponents
with
Themselves and Total Scale

	Academic Adj.	Social Int.	Total
BONDING	0.43	0.83	.84
ACADEMIC ADJUSTMENT		0.36	0.79
SOCIAL INTEGRATION			0.84

NOTE: N = 459
p < .001 for all correlations

Table 2

Summary Table for Multiple Regression

Dependent Variable: VAR 01

<u>Variable</u>	<u>Mult R.</u>	<u>R Squ.</u>	<u>Rsq Change</u>	<u>Simple R</u>	<u>B</u>	<u>Beta</u>
BONDING	0.68148	0.46441	0.46441	0.68148	0.17841	1.34054
SOCIAL INTEGRATION	0.79845	0.63752	0.17311	0.33193	-0.07953	-0.74190
ACADEMIC ADJUSTMENT	0.80375	0.64601	0.00849	0.20818	-0.01173	-0.10221
(CONSTANT)					0.81636	

NOTE: The academic adjustment component does not at significantly to the overall R..

Table 3

Rotated Factor Pattern

	SOCIAL INTEGRATION	ACADEMIC ADJUSTMENT	PLANS TO STAY
	FACTOR 1	FACTOR 2	FACTOR 3
VAR1	0.11474	-0.03557	0.74958
VAR2	0.63450	0.07676	0.37271
VAR3	0.72695	-0.04281	0.09027
VAR4	0.51948	0.21741	0.38548
VAR5	0.67234	-0.06200	0.11659
VAR6	0.34789	0.19145	0.51103
VAR7	0.32398	0.08512	0.74721
VAR8	0.62584	-0.01234	0.15236
VAR9	0.40987	-0.17665	0.34420
VAR10	0.45796	-0.01874	0.23848
VAR11	0.10041	0.41219	0.29025
VAR12	0.05509	0.14250	0.41344
VAR13	0.60147	0.09879	0.19297
VAR14	0.65752	0.11459	0.16056
VAR15	0.11304	0.22373	0.47929
VAR16	0.62471	0.06543	-0.01955
VAR17	0.09209	0.02543	0.71612
VAR18	0.66852	0.12328	0.09943
VAR19	0.63497	0.10213	0.05403
VAR20	0.43999	0.12546	0.28847
VAR21	0.10195	0.05656	0.67482
VAR22	0.80014	-0.02749	0.06564
VAR23	0.61493	0.13707	0.08443
VAR24	0.15592	0.06449	0.19462
VAR25	0.48069	0.06792	-0.08963
VAR26	-0.03769	0.21218	0.07315
VAR27	-0.13303	0.33026	0.03478
VAR28	0.07643	0.64863	0.08896
VAR29	-0.03211	0.63957	0.21428
VAR30	0.06259	0.42887	0.09475
VAR31	0.02766	0.68231	-0.13769
VAR32	0.12296	0.73506	0.06518
VAR33	0.12532	0.25644	0.54167
VAR34	-0.01503	0.17119	0.42729
VAR35	0.25185	0.67811	0.02912
VAR36	0.03463	0.33662	0.11805
VAR37	0.16371	0.51377	0.35281
VAR38	0.15050	0.70092	-0.06921
VAR39	0.04255	0.48329	0.23257
VAR40	0.18593	0.50854	0.50608

Table 4

Factor Structure Matrix

Rotation Method: OBLIQUE

	SOCIAL INTEGRATION	ACADEMIC ADJUSTMENT	PLANS TO STAY
	FACTOR 1	FACTOR 2	FACTOR 3
VAR1	0.23983	-0.05222	-0.74591
VAR2	0.69388	-0.18524	-0.50363
VAR3	0.72505	-0.04961	-0.23361
VAR4	0.59551	-0.31241	-0.51027
VAR5	0.67439	-0.02702	-0.24523
VAR6	0.44677	-0.27960	-0.59280
VAR7	0.45515	-0.19517	-0.80294
VAR8	0.63932	-0.07434	-0.27665
VAR9	0.44655	0.09372	-0.39621
VAR10	0.48906	-0.05738	-0.32427
VAR11	0.18481	-0.44768	-0.35585
VAR12	0.13833	-0.18812	-0.43077
VAR13	0.63214	-0.18544	-0.32537
VAR14	0.68286	-0.20424	-0.30770
VAR15	0.21369	-0.28156	-0.51724
VAR16	0.61508	-0.13405	-0.11988
VAR17	0.21709	-0.10662	-0.71667
VAR18	0.68378	-0.20803	-0.25186
VAR19	0.64113	-0.17879	-0.19811
VAR20	0.49267	-0.20283	-0.38771
VAR21	0.22229	-0.13442	-0.68274
VAR22	0.79389	-0.07067	-0.22698
VAR23	0.62979	-0.21405	-0.22794
VAR24	0.19240	-0.10084	-0.22956
VAR25	0.46184	-0.11313	-0.02223
VAR26	-0.00580	-0.21269	-0.09061
VAR27	-0.09573	-0.31472	-0.04886
VAR28	0.14684	-0.65872	-0.18644
VAR29	0.06137	-0.64979	-0.28409
VAR30	0.11517	-0.44048	-0.16062
VAR31	0.06250	-0.66399	0.03906
VAR32	0.19586	-0.74711	-0.18432
VAR33	0.23943	-0.32148	-0.58451
VAR34	0.07445	-0.20985	-0.43329
VAR35	0.31107	-0.70195	-0.16886
VAR36	0.08376	-0.34840	-0.16538
VAR37	0.26661	-0.56152	-0.44288
VAR38	0.19653	-0.70318	-0.05536
VAR39	0.12421	-0.50564	-0.29709
VAR40	0.31461	-0.57407	-0.59541

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